ACTION MEMORANDUM #1 FOR THE 300 AREA FACILITIES

1.0 PURPOSE

The purpose of this action memorandum is to document approval of the non-time-critical removal action described herein for disposition of 72 buildings and structures located in the northern section of the 300 Area of the Hanford Site (Figure 1).

The proposed removal action to be implemented for the 72 buildings and structures (subsequently referred to as facilities[1]) in the 300 Area is outlined in the *Engineering Evaluation/Cost Analysis #1 for the 300 Area* (EE/CA) (DOE-RL 2004), which was prepared by the U.S. Department of Energy (DOE). The EE/CA evaluated removal actions for 82 facilities. However, ten of the facilities have subsequently been removed from this action as the facility and foundation have been removed and no hazardous or radioactive constituents remain. The preferred removal action identified in the proposal was to deactivate, decontaminate, and demolish the buildings. Waste generated from the removal action that meets Environmental Restoration Disposal Facility (ERDF) waste acceptance criteria will be disposed at ERDF.

This removal action minimizes the potential for a release of hazardous substances[2] from the facilities (listed in Appendix A) that could adversely impact human health and the environment, is protective of the site personnel and the environment, and contributes to the efficient performance of any remedial actions, including any future subsurface soil remediation. The action includes building contents, above-ground structures, on-grade floor slabs, and the below-grade foundations and piping.

A 30-day public comment and review period for the subject EE/CA was held from October 25, 2004, through December 1, 2004. The comment period was used to evaluate removal action alternatives for the 72 facilities presented in the EE/CA as well as the facility specific information available in the Administrative Record. All comments received generally supported implementation of this action. The comments and responses are provided in Appendix B.

2.0 SITE CONDITIONS AND BACKGROUND

There are 220 facilities located within the 300 Area Complex. Many of these 220 facilities are empty, while other facilities are used to support the research and development (R&D) or landlord activities of the 300 Area. Years of reactor fuel fabrication and laboratory operations in the 300 Area Complex have left the facilities contaminated.

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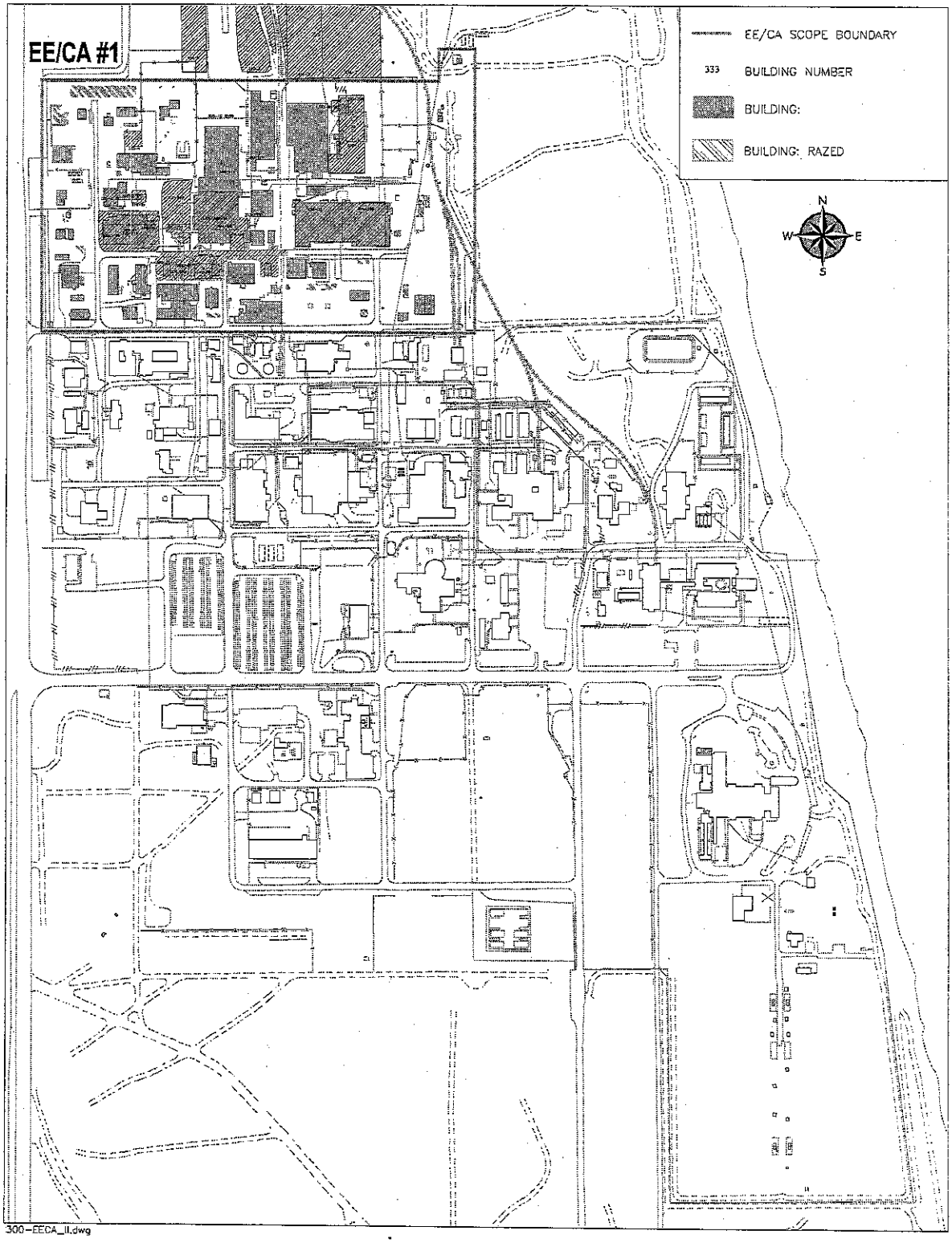
[1] The term "facility" is used generically to encompass all the surface and subsurface structures, buildings, foundations, piping, ducting, etc., associated with the facility.

[2] "Hazardous substances" means those substances defined by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, Section 101(14), and includes both radioactive and chemical substances.

Figure 1. 300 Area of the Hanford Site



Of the 72 facilities within the scope of this removal action, there continue to be 20 active (i.e., used daily) facilities, 36 inactive facilities, and another 16 facilities that were previously demolished but are included in this document to ensure that any remaining contaminated foundation or subsurface structure is removed. In most cases, these facilities overlie the waste sites in the 300-FF-2 Operable Unit (OU). Before the 300 FF-2 OU selected remedy for waste sites (EPA 2001) can be implemented for some of the waste sites, existing facility operations must be terminated or relocated; and deactivation, decontamination and decommissioning (D&D), and removal of the associated buildings must be completed to obtain access to underlying and/or adjacent contaminated waste sites. Cleared geographical areas are also required for staging areas to support future remedial action operations. Appendix A identifies the facilities included in this action, provides a contamination and risk summary, and describes the facilities' relationships to the 300-FF-2 waste sites. All facilities will be vacated in a time frame supporting completion of this removal action by September 30, 2015.

2.1 BACKGROUND

In March 1943, construction of a nuclear fuel fabrication complex began at the Hanford Site in an area along the western bank of the Columbia River, approximately 12 km (7.5 mi) north of the city of Richland. This area was commonly referred to as the "300 Area." As a manufacturer of uranium fuel, the 300 Area housed the first essential step in the plutonium production process. Nuclear fuel was fabricated from uranium shipped in from offsite support facilities. Metallic uranium was extruded into the proper shape and encapsulated in aluminum alloy cladding (early years) or zircalloy cladding (later years). The fuel was then transported north to the 100 Area of the Hanford Site for irradiation.

The operational history of the 300 Area and its facilities varied greatly. In addition to housing the Hanford Site fuel fabrication plants, the 300 Area was the center of much of the site R&D projects. In connection with these activities, chemical process laboratories, test reactors, and numerous ancillary support structures were constructed. The addition of new research and laboratory facilities continued into the 1960s to support defense and energy research. New support and laboratory facilities were added in the 1970s for further research on energy, waste management, biological sciences, and environmental sciences.

Coinciding with the transition of the sitewide mission from defense production to environmental cleanup in 1989, the focus of the 300 Area operations shifted to continued research and cleanup of contamination from past operations. The 300 Area continues to be an active industrial complex, housing many of the Hanford Site's R&D facilities and analytical laboratories. Other operations in the 300 Area include waste management and disposal, facility transition, D&D, and environmental cleanup.

In November 1989, the 300 Area was one of four areas of the Hanford Site that were placed on the U. S. Environmental Protection Agency (EPA) National Priorities List (NPL) under the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (1980). The 300 Area NPL site is subdivided into three operable units to address cleanup of the soil and groundwater contamination that resulted from past operations. The 300-FF-1 and 300-FF-2 OUs address contamination at liquid disposal sites, burial grounds, and most of the soil waste sites in the 300 Area NPL site. The 300-FF-5 OU addresses groundwater contamination beneath the

burial grounds and other soil waste sites located within the geographical boundary of the 300 Area NPL site. Records of Decision have been issued for all three of the 300 Area OUs and remedial actions are ongoing.

2.2 FACILITY DESCRIPTION

The facilities addressed in this action memorandum include a combination of testing facilities, storage buildings, laboratories, shops, and offices located in the northern section of the 300 Area Complex (Figure 2). A brief description and history of each of the 72 facilities, including three *Resource Conservation and Recovery Act of 1976* (RCRA) treatment, storage, and disposal (TSD) facilities, can be found in the *Engineering Evaluation/Cost Analysis #1 for the 300 Area* (DOE-RL 2004). The 300-FF-2 OU waste sites that are present beneath and/or adjacent to the facilities included in this action memorandum are identified in Appendix A. The proximity of the facilities to one another and to underlying or adjacent 300-FF-2 OU waste sites is depicted in Figure 2.

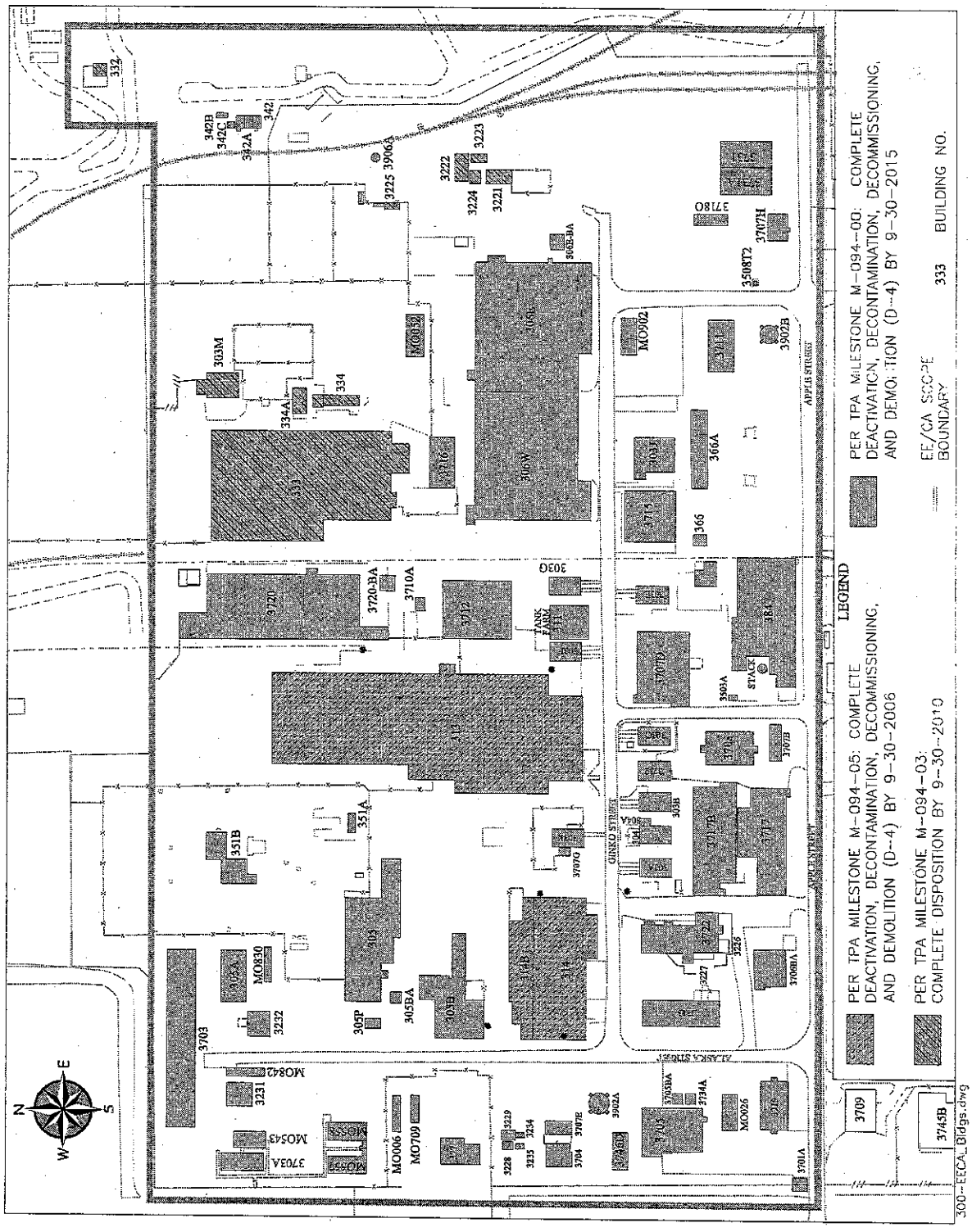
Each of the RCRA TSD facilities (303-M, 300 Area Waste Acid Treatment System [WATS], and 305-B) will complete closure in accordance with *Washington Administrative Code* (WAC) 173-303 under the regulatory lead of the Washington State Department of Ecology (Ecology). At some of these existing RCRA units (305-B), closure actions may be completed before the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) removal actions are initiated. For other RCRA units (303-M and 300 Area WATS), if RCRA closure actions are not completed before the CERCLA action, then agreements exist between Ecology and DOE to coordinate RCRA closure with the CERCLA removal actions planned for the 300-FF-2 OU.

2.3 SOURCE, NATURE, AND EXTENT OF CONTAMINATION

In general, the facilities addressed in this action memorandum are contaminated with hazardous substances associated with fabricating and testing uranium fuel elements and operating laboratories and research facilities. The source of contamination at each facility within the 300 Area Complex depends on the specific operations conducted at the facility. To help identify hazardous substances, several sources of information were used, including historical operations information, radiological survey reports, radiation occurrence reports, facility assessment reports, personnel interviews, facility characterization reports, vulnerability assessments, inspections, and knowledge of construction materials. In some facilities, the presence of hazardous substances is suspected but has not been confirmed. After further characterization, facilities determined to not be contaminated with hazardous substances will be addressed outside of this action.

To the extent practicable, hazardous substances including bulk chemicals that are no longer in use have been, or will be, removed from the facilities during routine operations and surveillance and maintenance (S&M). However, at many of the facilities, residual contamination remains on facility surfaces (including the roof), in piping and ductwork, and in structural materials.

Figure 2. 300-FF-2 Operable Unit Waste Sites.



Specific contaminants and, where available, radioactive dose information for individual facilities are summarized in Appendix A. The primary contaminants of concern are the following radionuclides:

- Americium-241
- Cesium-137
- Cobalt-60
- Strontium-90
- Plutonium isotopes
- Technetium-99
- Thorium isotopes
- Uranium isotopes.

The facilities also contain nonradioactive hazardous substances, as either contaminants from operations or components of structural materials. These include the following:

- Asbestos
- Cadmium
- Beryllium
- Lead
- Polychlorinated biphenyls (PCBs)
- Mercury (in electrical switches)
- Refrigerants (freon)
- Lubricants
- Commercial solvents
- Corrosives
- High-efficiency particulate air (HEPA) filter media
- Sodium vapor and mercury vapor lighting.

Characterization will be conducted as part of the removal action activities in accordance with approved sampling and analysis plans. The characterization information will be used to support waste designation, which may include nondestructive assay, and to determine if the removal action objectives and stabilization requirements have been met. Characterization data will also be used to determine whether any contamination remaining after facility removal should be identified as a waste site to be then incorporated into the 300-FF-2 OU for subsequent remedial action.

2.4 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Most of the facilities included in this removal action are contaminated with radioactive and/or nonradioactive hazardous substances. In some facilities, the presence of hazardous substances is suspected but has not been confirmed. After further characterization, facilities determined to not be contaminated with hazardous substances will be addressed outside of this action. The risks associated with the radioactive and/or nonradioactive contaminants have not been quantified in detail, in part because of limited characterization data. Consequently, the following discussion provides a discussion of the qualitative risks.

The major contaminants of concern at the facilities addressed in this action memorandum are radionuclides, which above acceptable levels are known to be carcinogenic or hazardous. Many of the facilities may contain low levels of radioactive contamination as surface contamination or as a part of the structural material. Where characterization data exists, potential exposure to workers and the public from radionuclide contamination in the facilities exceeds the upper end of the CERCLA risk range that can be approximated by a dose rate of 15 mRem/year. For instance, a dose rate of 130 mRem/year was calculated for the 304A Uranium Concretion Facility Change Room. Hazardous substances, including asbestos insulation, beryllium, heavy metals (such as mercury in switches and lead shielding), and PCBs in building materials are also present in the facilities. The four most commonly encountered hazardous substances in the 300 Area are asbestos, PCBs in concentrations greater than 50 parts per million (ppm) and as high as 133 ppm (in the 314 Engineering Development Laboratory), average concentrations of lead in paint of 8.5 ppm, and beryllium in concentrations as high as 0.9 ppm.

A security fence currently surrounds the area to limit unauthorized entrance. In addition, the facilities are locked and require approval prior to entry. As long as DOE retains control of the 300 Area, these access controls would help prevent direct contact with and exposure to the hazardous materials. However, access controls will not prevent deterioration of the facilities or reduce the threat of release of radiological and hazardous substances to the environment over the long term. Radiological and hazardous substances could be released directly to the environment via a breach in a pipe, containment wall, roof, or other physical control failure as the facilities age and deteriorate. Radiological and hazardous substances could also be released to the environment through animal intrusion into the contaminated structures and systems. Historically, intrusion and spread of contamination by rodents, insects, birds, and other organisms has been difficult to control and prevent.

As the facilities continue to age, the threat of a release of radiological and hazardous substances from facility deterioration and animal intrusion increases, and it becomes more difficult to confine these materials from the environment. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. Also, potential releases from associated waste sites pose a significant risk to human health and the environment as described in the 300-FF-2 feasibility study (DOE-RL 2000).

2.5 OTHER ACTIONS TO DATE

Sixteen of the 72 facilities included in this removal action were previously demolished or removed, however, hazardous substances may remain in associated foundations or subsurface structures which pose a substantial threat of release to the environment. These foundations will be removed as part of this action. Further characterization in support of site close out will be performed.

The removal action will mitigate potential risks to human health and the environment and to support cleanup of the underlying 300-FF-2 OU waste sites. To date, limited soil cleanup activities have been performed in this area.

3.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Conditions persist wherein threats to the public health or the environment exist.

The "National Oil and Hazardous Substance Pollution Prevention Contingency Plan" (NCP), 40 *Code of Federal Regulations* (CFR) 300.415(b)(2), establishes factors to be considered in determining the appropriateness of a removal action. Those factors include the following:

- *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.* Hazardous substances, including radionuclides, are present as contamination within the cells, equipment, and additional structures. These substances pose an increasing threat of release to humans and ecological receptors as the facilities continue to deteriorate with age. As contamination becomes exposed and as structural integrity is compromised, the potential direct exposure (i.e., inhalation of contaminated dust and debris, direct contact with contaminated debris, etc.) of nearby personnel and the environment, and exposure to the public through airborne radioactive contaminants increases. In addition, the S&M activities required to maintain confinement of the building and additional structures increasingly pose a potential exposure to the environment.

- *High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.* Several of the facilities addressed in this action memo are situated over or adjacent to contaminated soil waste sites that require remediation in accordance with the 300-FF-2 ROD. Spread of contamination from the facilities (i.e., animal intrusion, facility deterioration, etc.) can result in further contamination of the underlying soils.

- *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.* The potential for wind or precipitation-related releases of hazardous substances within the facilities increases as the facilities continue to deteriorate with age.

- *Hazardous substances or pollutants or contamination in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.* Hazardous substances, including radioactive substances, are contained within the pipes and vessels of the 72 facilities addressed in this action memorandum. These substances pose a threat of accidental release that may result from animal intrusion.

The external radiation, inhalation, and ingestion risks to the site workers, the public, and ecological receptors associated with potential releases of contamination under a continued S&M scenario justify a non-time-critical removal action.

4.0 ENDANGERMENT DETERMINATION

The response action proposed is necessary to protect the public health or welfare or the environment from the actual or threatened releases of hazardous substances, including radioactive substances from the facilities into the environment. Such a release or threat of release may present an imminent and substantial endangerment to public health or welfare or the environment.

5.0 PROPOSED ACTIONS AND ESTIMATED COSTS

Proposed actions and estimated costs are presented in the following sections.

5.1 PROPOSED ACTION

An EE/CA was prepared to develop removal action alternatives for 72 facilities located in the northern section of the 300 Area. The scope of this removal action addresses only the facilities themselves. The soil underlying some of the facilities may also be contaminated. Where there is previous knowledge of such contamination, the soil has already been identified as a separate waste site and will be remediated under the authority of CERCLA response actions under the 300-FF-2 OU. If extensive contamination associated with the underlying soil is identified in the future, it will be noted within the Waste Information Data System (WIDS) and addressed under the 300-FF-2 OU remediation process or other soil remediation activity. Orphan or otherwise unidentified facilities and foundations within the geographical boundary of this removal action (as shown in Figures 1 and 2) that are not addressed by the 300-FF-2 OU may be addressed as part of this action if the facility is found to be contaminated with hazardous substances and poses a threat of release to the environment.

The removal action alternatives evaluated for the facilities must meet the removal action objectives. The specific removal action objectives for this response action are as follows:

- Protect human receptors from exposure to radiological and hazardous substances in facility structures above acceptable exposure levels for employees
- Control the release of radiological and hazardous substances from the facilities into the environment
- Facilitate remediation of 300 Area waste sites in accordance with the 300-FF-2 OU interim action record of decision (ROD) (EPA 2001)
- Achieve applicable or relevant and appropriate requirements (ARARs) to the fullest extent practicable
- Safely treat, as appropriate, and dispose of waste streams generated by the removal action.

Based on these considerations, the following three removal actions are identified:

- Alternative 1: No action
- Alternative 2: Deactivation/D&D
- Alternative 3: S&M with eventual deactivation/D&D.

5.1.1 Alternative 1: No Action

Under the no action alternative, Hanford Site access controls would be maintained to help prevent worker or public entry to the contaminated facilities. No other specific controls would be established for the facilities. Risks over time are expected to increase as facility deterioration progresses and structural integrity is compromised. The no action alternative does not address the hazards posed by the facilities, which will increase as the facilities continue to deteriorate. Eventually, decay is expected to result in radiological releases to the environment and potential exposure to personnel and the public. Physical hazards associated with partial structure collapse also are anticipated.

In addition, the no action alternative would impede remedial action progress for the 300-FF-2 OU waste sites located in the geographical area.

5.1.2 Alternative 2: Deactivation/D&D

The objective of the D&D alternative is to demolish the buildings and structures and reduce the threat of release of hazardous substances. The action includes deactivating the facilities by removing physical, chemical, and radiological barriers to demolition. Deactivation would be followed by decontamination, decommissioning, and demolition of the buildings and structures[3]; and disposal of the materials at the ERDF or other facility in accordance with waste acceptance criteria. The D&D alternative would initiate the process of demolishing the 72 buildings and structures in the north end of the 300 Area in the near future. Work would be completed no later than September 30, 2015, to support the 300-FF-2 OU schedule for completing remedial actions in the 300 Area. In some facilities, the presence of hazardous substances is suspected but has not been confirmed. After further characterization, facilities determined not to be contaminated with hazardous substances will be addressed outside of this action.

The majority of the facility demolition would require the use of heavy equipment (e.g., excavator with various attachments) to demolish structures. Other industry standard practices for demolition also might be used (e.g., mechanical saws and cutting torches). In general, below-grade structures (e.g., slab, basement, and foundation) would be demolished and removed. Approximately 1 meter of surrounding soil will be removed and disposed with the building material. On a case-by-case basis, the facility slab or foundation may be left in place where the facilities are located above or adjacent to known or suspected 300-FF-2 OU waste sites. In these instances, clean fill/soil or other barrier may be placed over remaining contamination in accordance with an EPA-approved work plan.

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[3] This includes building contents, above-ground structures, on-grade floor slabs, and the below-grade foundations and piping.

5.1.3 Alternative 3: Long-Term Surveillance and Maintenance Followed by D&D

The objective of long-term S&M is to sustain the buildings and structures in a safe condition for up to 11 years (until 2015) before initiating the demolition process. To the extent possible, S&M would be performed to minimize the potential for an environmental release and to protect workers while maintaining compliance with applicable state and federal regulations and DOE orders. During the S&M phase, existing access controls would be maintained to warn workers of potential hazards and restrict public access to the 300 Area. Major repairs, such as re-roofing and shoring structural components, would be performed only as necessary to ensure facility integrity for containment of hazardous materials.

In general, as facilities age and deteriorate, S&M must become more aggressive over time, and worker safety is a critical factor. Without an increasingly aggressive S&M program, the threats associated with unplanned releases to the environment and injury or exposure to workers would increase. Conversely, an aggressive S&M program would require more frequent worker entry into the facilities to perform more invasive maintenance procedures, which would increase the potential for exposure to workers. In addition, personal protection requirements to maintain a more aggressive program could continually increase, which would add to the cost.

Following the S&M phase of this alternative, the facilities would still need to undergo deactivation and D&D. The deactivation and D&D phase of the alternative is assumed to be performed as described in Section 5.1.2 to support remediation of the 300-FF-2 OU waste sites by September 30, 2015, to meet Tri-Party Agreement Milestone M-094-00.

5.2 WASTE MANAGEMENT CONSIDERATIONS FOR ALTERNATIVES

With the exception of the no action alternative, each of the alternatives results in the generation of waste requiring appropriate disposal. The majority of the contaminated debris likely is designated as low-level waste (LLW); however, quantities of mixed waste, dangerous waste, and transuranic (TRU) waste might be generated. Waste management ARARs are discussed in Section 5.3.

Contaminated waste for which no reuse, recycle, or decontamination option is identified would be characterized and assigned an appropriate waste designation (e.g., solid, asbestos, PCB, radioactive, dangerous, mixed). Most of the contaminated waste generated during implementation of these alternatives would be disposed onsite at the ERDF near the 200 West Area. The ERDF is the preferred waste disposal option because the ERDF is an engineered facility that provides a high degree of protection to human health and the environment, and previous EE/CAs for other Hanford Site facilities have shown that this disposal option is more cost effective than disposal at other disposal sites. Construction of the ERDF was authorized using a separate CERCLA ROD (EPA 1995). The ERDF is designed to meet minimum RCRA technological requirements for landfills, including standards for double liner, a leachate collection system, leak detection, monitoring, and a final cover.

In 1996, an explanation of significant difference (ESD) (Ecology et al. 1996) clarified the ERDF ROD (EPA 1995) for eligibility of waste generated during Hanford Site cleanup activities. In accordance with the ESD, any low-level waste, mixed waste, and hazardous/dangerous waste

generated as a result of CERCLA or RCRA cleanup actions (e.g., D&D, RCRA past-practice, and investigation-derived wastes) is eligible for ERDF disposal, provided that appropriate CERCLA decision documents are in place and that the waste meets ERDF waste acceptance criteria (BHI 2002). The waste that would be generated under these alternative CERCLA removal actions falls within the definition of waste eligible for disposal at the ERDF.

While most waste generated during the removal action is anticipated to meet ERDF waste acceptance criteria, some waste may require treatment to meet ERDF waste acceptance criteria or RCRA land disposal restrictions. The type of treatment and the location of treatment would be conducted in accordance with the approved work plan. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting. Specifically, this includes low-level radioactive and nonradioactive liquid waste.

Liquid waste containing levels of radioactive and/or nonradioactive hazardous substances meeting the 200 Area Effluent Treatment Facility (ETF) waste acceptance criteria would be transferred to the ETF and treated to meet ETF waste discharge criteria. Liquids that do not meet ETF waste acceptance criteria would be treated to meet land disposal restrictions and either disposed at the ERDF (if ERDF waste acceptance criteria are met) or stored at the Central Waste Complex (CWC) or another approved storage facility, subject to final disposition under CERCLA. Uncontaminated water (e.g., nonradioactive and nonhazardous) could be used for dust suppression.

If TRU waste is encountered, it would be placed in interim storage at the Waste Receiving and Processing Facility, Module 1 (WRAP) or the CWC and shipped offsite to the Waste Isolation Pilot Plant (WIPP) in accordance with the WIPP waste acceptance criteria and the schedule established for completing remedial actions no later than September 30, 2024.

Of the above Hanford Site disposal options, only the ERDF is considered to be "onsite" for management and/or disposal of waste from removal actions proposed in this document[4]. There is no requirement to obtain a permit to manage or dispose of CERCLA waste at the ERDF. It is expected that the great majority of the waste generated during the removal action proposed in this document can be disposed onsite at the ERDF. For waste that must be sent elsewhere, other than TRU waste, the U.S. Environmental Protection Agency (EPA) would make a determination in accordance with 40 CFR 300.440 as to the acceptability of the proposed site for receiving this CERCLA removal action waste. The EPA has already made this determination for the WIPP

[4] CERCLA Section 104(d)(4) states that, where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the President may, at his discretion, treat these facilities as one for the purpose of this section. The preamble of the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300) clarifies the stated EPA interpretation that when noncontiguous facilities are reasonably close to one another, and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one site for response purposes and, therefore, allows the lead agency to manage waste transferred between such noncontiguous facilities without having to obtain a permit. Therefore, the 300 Area NPL site and the ERDF are considered to be onsite for response purposes under this removal action. It should be noted that the scope of work covered in this removal action is for facilities and waste contaminated with hazardous substances. The DOE will disposition materials encountered during implementation of the selected removal action that are not contaminated with hazardous substances under non-CERCLA authority.

disposal of TRU waste. Treatment residuals from an offsite facility can be disposed in ERDF providing that the treatment residuals meet the ERDF waste acceptance criteria.

5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND OTHER CRITERIA, ADVISORIES, OR GUIDANCE TO BE CONSIDERED

40 *Code of Federal Regulations* (CFR) 300.415(j) requires that applicable or relevant and appropriate requirements (ARARs) be met (or waived) to the extent practicable during the course of removal actions. When requirements are identified, a determination must be made as to whether those requirements are applicable or relevant and appropriate. A requirement is applicable if it specifically addresses a hazardous substance, pollutant or contaminant, remedial action, location or other circumstance at the site. If not applicable, a requirement may nevertheless be relevant and appropriate if it addresses problems or situations sufficiently similar to the problems or situations encountered and their use is well suited to the site.

ARARs include only substantive requirements of environmental standards. ARARs do not include administrative requirements, including requirements to obtain any federal, state, or local permits (40 CFR 300.400[e] and 42 U.S.C. 9621(e)).

To-be-considered (TBC) information consists of nonpromulgated advisories or guidance issued by federal or state governments that are not binding legally and do not have the status of ARARs. As appropriate, TBCs should be considered in determining the removal action necessary for protection of human health and the environment. Requirements drawn from TBCs may be included in the selected alternative.

Because the alternatives would result primarily in waste generation and potential for air emissions, the key ARARs identified for the alternatives considered include waste management standards, standards controlling releases to the environment, standards for protection of natural resources, and safety and health standards[5]. The ARARs are discussed generally in the following sections. Off site management would require compliance with all applicable, substantive, and administrative requirements.

5.3.1 Waste Management Standards

A variety of waste streams would be generated under the proposed removal action alternatives. It is anticipated that most of the waste will designate as LLW. However, quantities of TRU waste, dangerous or mixed waste, and asbestos and asbestos-containing material also could be generated. The great majority of the waste will be in a solid form. However, some aqueous solutions might be generated.

Waste designated as LLW that meets ERDF waste acceptance criteria (BHI 2002) would be disposed at the ERDF, which is engineered to meet appropriate performance standards under 10 CFR 61. If TRU waste is encountered, it would be placed in interim storage at the Waste

[5] Safety standards are not environmental standards per se and therefore not potential ARARs. Instead, compliance with applicable safety regulations, such as OSHA requirements, is required external to the CERCLA ARAR process. However, due to the nature and importance of these standards, a discussion of the safety requirements are included in this Action Memorandum.

Receiving and Processing Facility, Module 1 (WRAP) or the CWC and shipped offsite to the Waste Isolation Pilot Plan (WIPP) in accordance with the WIPP waste acceptance criteria and the schedule established for completing remedial actions no later than September 30, 2024.

The identification, storage, treatment, and disposal of hazardous component of mixed waste are governed by RCRA. Washington State, which implements RCRA requirements under WAC 173-303, has been authorized to implement most elements of the RCRA program. The dangerous waste standards for generation and storage are applicable to the management of any dangerous or mixed waste generated under this action. Treatment standards for dangerous or mixed waste subject to RCRA land disposal restrictions are specified in WAC 173-303-140, which incorporates 40 CFR 268 by reference. Waste that does not qualify for disposal in ERDF will be disposed of at an off site facility approved by EPA in accordance with 40 CFR 300.440.

Waste designated as dangerous or mixed waste would be treated as appropriate to meet land disposal restrictions and ERDF acceptance criteria, and disposed at ERDF. ERDF is engineered to meet landfill design standards under WAC 173-303-665. All applicable packaging and pre-transportation requirements for dangerous or mixed waste generated at the 72 facilities would be identified and implemented before movement of any waste.

Some of the aqueous waste designated as LLW, dangerous, or mixed waste may be transported to ETF for treatment and disposal. ETF is a RCRA-permitted facility authorized to treat aqueous waste streams generated on the Hanford Site and dispose of these streams at a designated state-approved land disposal facility in accordance with all applicable requirements.

The management and disposal of PCB waste are subject to the *Toxic Substances Control Act of 1976* (TSCA) and regulations at 40 CFR 761. The TSCA regulations contain specific provisions for PCB waste, including PCB waste that contains a radioactive component. PCBs also are considered underlying hazardous constituents under RCRA and thus could be subject to WAC 173-303 and 40 CFR 268 requirements. Offsite treatment and/or disposal would require an offsite acceptability determination from EPA in accordance with 40 CFR 300.440, with notification to Ecology. Waste designated as PCB remediation waste likely would be disposed at the ERDF, depending on whether the waste is a LLW. All waste suspected to contain PCBs would be evaluated to determine whether the waste meets ERDF acceptance criteria. Any PCB waste that does not meet ERDF acceptance criteria would be retained at a PCB storage area meeting the requirements for TSCA storage and transported for future disposal at an appropriate disposal facility.

Removal and disposal of asbestos and asbestos-containing material are regulated under the *Clean Air Act of 1977* (40 CFR 61, Subpart M). The 40 CFR 61 requirements applicable to this removal action are contained in 40 CFR 61.145(c) and 40 CFR 61.150. These regulations establish removal requirements based on quantity present and handling requirements. These regulations also specify handling, packaging, and disposal requirements for regulated sources having the potential to emit asbestos. Substantive requirements of these standards are applicable because this removal action includes abatement of asbestos and asbestos-containing materials. Asbestos and asbestos-containing material would be removed, packaged as appropriate, and disposed at ERDF.

The *Hazardous Materials Transportation Act of 1974* (49 U.S.C. 1801-1813), as implemented by the "U.S. Department of Transportation Requirements for the Transportation of Hazardous Materials" (49 CFR 100 through 179), governs the transportation of potentially hazardous materials, including samples and waste. These requirements are not potential ARARs but would have to be met where applicable for any wastes or contaminated samples that would be shipped from the 300 Area in commerce and over public roads.

The removal action will be performed in compliance with all above waste management ARARs. All waste streams will be evaluated, designated, and managed in compliance with the ARAR requirements. Before disposal, waste will be managed in a protective manner to prevent releases to the environment or unnecessary exposure to personnel. Details on how compliance with ARARs will be achieved during implementation of the removal action will be contained the removal action work plan.

5.3.2 Standards Controlling Emissions to the Environment

The proposed removal action alternatives would have the potential to generate both radioactive and nonradioactive airborne emissions.

The federal *Clean Air Act* and the "Washington Clean Air Act" (*Revised Code of Washington* [RCW] 70.94) regulate both criteria/toxic and radioactive airborne emissions. Implementing regulations found in 40 CFR 61.92 sets limits for emission of radionuclides from the entire facility to ambient air. Radionuclide emissions can not exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem/yr. The definition of a facility includes all buildings, structures, and operations at one contiguous site. This requirement is applicable because there is the potential to emit radionuclides to unrestricted areas from the removal action. WAC 173-480-070 requires verification of compliance with this standard.

Radioactive air emissions are to be controlled through the use of best available radionuclide control technology (WAC 246-247-040(3)) or as low as reasonably achievable control technology (WAC 246-247-040(4)). Emissions of radionuclides are to be measured for point sources (40 CFR 61.93) and for non-point sources (WAC 246-247-075(8)). Measurement techniques may include, but are not limited to, sampling, calculation, or smears for identifying emissions as determined by the lead regulatory agency. The substantive requirements of these regulations are applicable because fugitive, diffuse, and point source emissions of radionuclides to the ambient air may result from activities performed during the removal action.

WAC 173-400 and 173-460 establish requirements for emissions of criteria/toxic air pollutants. The primary source of emissions resulting from this removal action would be fugitive particulate matter. Requirements applicable to this removal action are contained in WAC 173-400-040(3) and (8). These regulations require that reasonable precautions be taken to: 1) prevent the release of air contaminants associated with fugitive emissions resulting from materials handling, demolition, or other operations; and 2) prevent fugitive dust from becoming airborne from fugitive sources of emissions.

WAC 173-460 would be applicable to removal actions that require the use of a treatment technology that emits toxic air pollutants. No treatment requirements have been identified at this time that would be required to meet the substantive applicable requirements of WAC 173-460. Treatment of some waste encountered during the removal action may be required to meet the ERDF waste acceptance criteria. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting, and WAC 173-460 would not be considered an ARAR because it would not result in emissions of toxic air pollutants. If more aggressive on-site treatment is required that would result in the emission of toxic air pollutants, the substantive requirements of WAC 173-460-030, WAC 173-460-060, and WAC 173-460-070 would be evaluated to determine if the requirements are applicable or relevant and appropriate.

5.3.3 Standards for Protection of Natural Resources

The *Archeological and Historic Preservation Act of 1974* (16 U.S.C. 469-469c) provides for the preservation of historical and archeological data (including artifacts) that might be irreparably lost or destroyed as the result of a proposed action. Although the removal action will occur in previously disturbed areas and the discovery of artifacts is unlikely, this law would be applicable to any significant artifacts that may be discovered.

The *Native American Graves Protection and Repatriation Act of 1990* (as implemented by 43 CFR 10) requires agencies to consult and notify culturally affiliated tribes when Native American human remains are inadvertently discovered during project activities. It is unlikely that work proposed in this removal action would inadvertently uncover human remains. If human remains were encountered, the procedures documented in the *Hanford Cultural Resources Management Plan* (DOE-RL 2003) would be followed.

The *National Historic Preservation Act of 1966* (as implemented by 36 CFR 800) requires Federal agencies to evaluate historic properties for *National Register of Historic Places* (NPS 1988) eligibility, and to mitigate adverse effects of Federal activities on any site eligible for listing in the Register. The facilities included in the scope of this removal action will be inspected to identify artifacts that may have interpretive or educational value prior to deactivation, decontamination, or decommissioning activities.

The *Endangered Species Act of 1973* and WAC 232-012-297 require the conservation of critical habitat on which endangered or threatened species depend and prohibit activities that threaten the continued existence of listed species or destruction of critical habitat. The *Migratory Bird Treaty Act of 1918* makes it illegal to remove, capture, or kill any migratory bird or any part of nests or the eggs of any such birds. Although adverse impacts to endangered or threatened species or migratory birds are not expected, activity specific ecological reviews will be conducted to identify any potentially adverse impacts prior to beginning field work.

5.3.4 Safety and Health Standards

Worker safety requirements are not potential ARARs under CERCLA but must be met. The DOE radiation protection standards, limits, and program requirements for protecting workers from ionizing radiation are specified in "Occupational Radiation Protection" (10 CFR 835). The rule also requires that measures be taken to maintain radiation exposures as low as reasonably

achievable. In addition, DOE must meet Occupational Safety and Health Administration requirements for worker protection (e.g., 29 CFR 1910 and 29 CFR 1926), national consensus standards, and DOE orders. Exposure limits, personnel protection requirements, and decontamination methods for hazardous chemicals are established by 29 CFR 1910. Identification and mitigation of physical hazards posed by a facility including (but not limited to) confined spaces, falling hazards, fire, and electrical shock are also required. 29 CFR 1926 provides requirements for worker safety during construction activities. The applicable DOE orders require analysis of hazards posed by work activities and identification of controls necessary to work safely.

Under Alternatives 2 and 3 of the EE/CA, radiological and physical hazards would be identified and analyzed prior to the start of field activities, and appropriate measures for mitigation would be addressed in a task-specific health and safety plan. A combination of personal protective equipment, personnel training, and administrative controls (e.g., limiting time in, and distance from, radiation zones) would be used to ensure that the requirements for worker protection are met. Individual monitoring would be performed, as necessary, to verify compliance with the requirements.

5.3.5 Standards for Controlling Stormwater Discharges

Stormwater runoff from some of the facilities listed in this action memorandum discharges to engineered structures (e.g., french drains). These drains are registered pursuant to WAC 173-218. A Hanford Site-Wide State Waste Discharge Permit issued pursuant to WAC 173-216 addresses discharges of stormwater to engineered structures. Substantive provisions of the permit include the implementation of best management practices and meeting the Groundwater Quality Criteria (WAC 173-200).The practices and controls to be implemented will be described in the removal action work plan as approved by the EPA. This could include eliminating or rerouting stormwater discharges or creating new discharge locations.

5.4 ESTIMATED COSTS

The following is a summary of estimated costs for the alternatives considered in the EE/CA. The near-term costs for implementing the no action alternative are negligible as no new costs are expected for such things as security, radiological surveys, or maintenance activities; therefore, costs for the no action alternative are not included.

Present-worth and nondiscounted cost estimates for the three alternatives are shown in Table 1. Individual cost estimates for performing alternatives two and three are provided in the *Engineering Evaluation/Cost Analysis #1 for the 300 Area* (DOE 2004) in Tables 4-1 and 4-3, respectively. Consistent with guidance established by the EPA and the U.S. Office of Management and Budget, present-worth analysis is included as a basis for comparing costs of cleanup alternatives under the CERCLA program (EPA 1993). Present-worth (discounted) cost values were calculated using the real interest rate on treasury notes and bonds from OMB Circular A-94 Appendix C (OMB 1992).

The summarized estimate is shown in Table 1, which includes a projection of the total nondiscounted cost for implementing deactivation/D&D (Alternative 2) for the facilities included

in the scope of this action memorandum, which would be $113.0 million based on present-day (2004) dollars. The cost for deactivation and D&D is estimated at $93.2 million and $19.9 million, respectively. The nondiscounted cost is the total cost without any adjustment based on an assumed interest rate over the duration of the project. The present-worth (discounted) cost is $107.4 million and is assumed to increase in value at a rate of 2.1% over the assumed 6-year duration of deactivation/D&D.

The total projected nondiscounted cost of implementing S&M followed by deactivation/D&D (Alternative 3) for the facilities included in the scope of this action memorandum would be $163.0 million based on present-day (2004) dollars (Table 1). This estimate is composed of $50 million for performing S&M and $113 million to perform deactivation and D&D. The present-worth (discounted) cost is $135.7 million and is assumed to increase in value at a rate of 2.8% over the 11-year duration.

Table 1. Total Costs for Removal Action Alternatives for the Northern Section of the 300 Area.[a,b]

Alternative Description	Nondiscounted Cost ($k)[e]				Present-Worth Cost ($k)
	S&M[c]	Deactivation[d]	D&D[d]	Total[d]	
Alternative #1: No Action	49,982	-0-	-0-	49,982	28,350[g]
Alternative #2: Facility deactivation, followed by D&D	N/A	93,173	19,864	113,037	107,350[f]
Alternative #3: Long-term surveillance and maintenance followed by facility deactivation, and D&D	49,982	93,173	19,864	163,019	135,700[g]

[a] All costs are 2004 dollars based on estimates prepared for the *Hanford Site 300 Area Accelerated Closure Project Plan* (FH 2000).

[b] The Tri-Party Agreement Milestone M-094-00 target date for completion of deactivation/D&D is 2015. The Tri-Party Agreement Milestone M-016-00B target date for completion of the 300-FF-2 remedial actions is 2018.

[c] Annual S&M costs are based on square footage of the facility multiplied by a risk/effort factor. Alternative 3 assumes the S&M phase is performed from 2005 to 2015 for all facilities to calculate listed values. S&M costs for Alternative 2 is included with deactivation costs.

[d] Deactivation/D&D costs for individual facilities were not developed in the *Hanford Site 300 Area Accelerated Closure Project Plan* (FH 2000). Listed values represent total cost for all of the facilities included in the subgroup.

[e] The nondiscounted cost is the total cost without any adjustment based on an assumed interest rate over the duration of the project.

[f] The present-worth discounted cost is assumed to increase in value at a rate of 2.1% over the assumed 6-year duration of the project. The discount rate used is the 5-year value of 2.1% is from OMB Circular A-94, Appendix C (OMB 1992). This rate was published in 2004 and is valid through January 2005.

[g] The present-worth discounted cost is assumed to increase in value at a rate of 2.8% over the assumed 11-year duration of the project. The discount rate used is the 10-year value of 2.8% is from OMB Circular A-94, Appendix C (OMB 1992). This rate was published in 2004 and is valid through January 2005.

5.5 PROJECT SCHEDULE

This removal action is scheduled to begin in early 2005. The sampling and analysis plan and the removal action work plan, which includes an air monitoring and waste management plan, will be submitted to EPA for review and approval and will be implemented as written and approved.

6.0 EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Severe weather can create facility conditions amenable to radiological releases, and long-term aging of engineered controls can lead to eventual failure. Additionally, failure to remove certain facilities precludes cost effective remediation of underlying or adjacent waste sites in accordance with the 300-FF-2 ROD. These conditions could result in an unplanned release. This may cause a threat to human health and the environment by direct exposure to nearby personnel and the environment, and exposure to the public through airborne radioactive contaminants.

7.0 OUTSTANDING POLICY ISSUES

There are no outstanding policy issues for this removal action.

8.0 SELECTED ALTERNATIVE

The selected removal action alternative for the facilities included in this action memorandum is deactivation and D&D (Alternative 2). The deactivation/D&D alternative provides increased protection to human health and the environment and is effective in maintaining that protection in both the short term and the long term. The alternative removes the threat of release of radiological and hazardous substances to the environment, which are caused by facility deterioration or animal intrusion; and reduces potential exposure to personnel caused by continued surveillance and maintenance of aging facilities. In addition, removal of the associated buildings contributes to the efficient performance of long term remedial actions for the 300-FF-2 OU.

This removal alternative was developed in accordance with CERCLA, as amended by the *Superfund Amendments and Reauthorization Act*, and is consistent with the NCP. This decision is based on information provided in the Administrative Record for this project.

9.0 REFERENCES

10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations,* as amended.

29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations,* as amended.

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations,* as amended.

40 CFR 191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes," *Code of Federal Regulations,* as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations,* as amended.

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations,* as amended.

40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," *Code of Federal Regulations,* as amended.

49 CFR 179, "Transportation," *Code of Federal Regulations,* as amended.

Atomic Energy Act of 1954, 42 U.S.C. 23, as amended.

BHI, 2002, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, BHI-00139, Rev. 4, Bechtel Hanford, Inc., Richland, Washington.

Clean Water Act of 1977, Public Law 95-217, 91 Stat. 1566 and Public Law 96-148, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 103, as amended.

DOE-RL, 2000, *Focused Feasibility Study for the 300-FF-2 Operable Unit*, DOE/RL-99-40, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2002, *Hanford Sitewide Transportation Safety Document*, DOE/RL-2001-36, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2003, *Hanford Cultural Resources Management Plan*, DOE/RL-98-10, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2004, *Engineering Evaluation/Cost Analysis #1 for the 300 Area*, DOE/RL-2001-30, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1996, *U.S. Department of Energy Hanford Environmental Restoration Facility, Hanford Site, Benton County, Washington, Explanation of Significant Difference (ESD)*, Washington Sate Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order,* as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

EPA, 1993, *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA,* EPA/540/F-94/009, U. S. Environmental Protection Agency, Washington D.C.

EPA, 1995, *Record of Decision, U.S. Department of Energy Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2001, *Declaration of the Record of Decision for the 300-FF-2 Operable Unit*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

FH, 2000, *Hanford Site 300 Area Accelerated Closure Project Plan*, HNF-6465, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

Endangered Species Act of 1973, 16 U.S.C. 1531, et seq.

Hazardous Materials Transportation Act of 1974, 49 U.S.C. 1801-1813, et seq.

Migratory Bird Treaty Act of 1918, 16 U.S.C. 703, et seq.

National Historic Preservation Act of 1966, 16 U.S.C. 470, et seq.

Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001, et seq.

NPS, 1988, *The National Register of Historic Places,* National Park Service, U.S. Department of the Interior, Washington, D.C.

OMB, 1992, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, Circular No. A-94, Office of Management and Budget, Washington, D.C.

RCW 70.94, "Washington Clean Air Act," *Revised Code of Washington* 70.94, as amended.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499, as amended.

Toxic Substances Control Act of 1976, 15 U.S.C. 2601, et seq.

WAC 173-216, "State Waste Discharge Permit Program", *Washington Administrative Code*, as amended.

WAC 173-218, "Underground Injection Control Program", *Washington Administrative Code*, as amended.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-400, "General Regulations for Air Pollution Sources," *Washington Administrative Code*, as amended.

WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," *Washington Administrative Code*, as amended.

WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides," *Washington Administrative Code*, as amended.

WAC 246-247, "Radiation Protection -- Air Emissions," *Washington Administrative Code*, as amended.

WAC 296-62, "General Occupational Health Standards," *Washington Administrative Code*, as amended.

Signature sheet for the Action Memorandum #1 for the Removal Action at the 300 Area Facilities between the U. S. Environmental Protection Agency and the U. S. Department of Energy

1/19/2005

Leif Erickson, Assistant Manager
for the River Corridor
Richland Operations Office
U. S. Department of Energy

Date

Signature sheet for the Action Memorandum #1 for the Removal Action at the 300 Area Facilities between the U. S. Environmental Protection Agency and the U. S. Department of Energy

Nick Ceto

Nick Ceto, Hanford Project Manager
U. S. Environmental Protection Agency

20 JAN 05

Date

APPENDIX A

SUMMARY OF FACILITIES IN THE SCOPE OF ACTION MEMO

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
1	303A	Storage building	Small/ Historical	Uranium General dose rate: 1.5 mR/hr Maximum dose rate: 5 mR/hr	Lead Suspect Beryllium	Occupancy of greater than 65 hr/yr could exceed general worker dose limits Obstructs access to waste site 300-15, 300-16, 300-28, 300-43, and 300-24
2	303B	Storage building	Small/Active	Uranium General dose rate: 1 to 3 mR/hr	Lead Suspect Beryllium	Occupancy of greater than 35 hr/yr could exceed general worker dose limits Obstructs access to waste site 300-15, 300-43, 300-251, 300-48, and 300-28
3	303C	Material evaluation laboratory	Small	Plutonium, uranium Vault tube B-42 identified as a high contamination area	Beryllium	Obstructs potential staging area for remediation of waste sites 300-28 and 300-48
4	303E	Storage building	Small	Potentially radiologically contaminated	Lead	Obstructs potential staging areas for waste site remediation
5	303F	Pumphouse	Small	Radiologically contaminated	Beryllium	Obstructs access to waste sites 313 ESSP, 300-224, 300-219, UPR-300-40, UPR-300-39, and UPR-300-45
6	303G	Storage building	Small	Radiologically contaminated	Lead	Obstructs access to waste sites 300-224, 300-219, UPR-300-40, UPR-300-39, and UPR-300-45

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
7	303J	Material storage building	Small	Potentially radiologically contaminated	Asbestos Lead	Obstructs access to waste site 300-15
8	303M	Uranium oxide facility	Small	Potentially radiologically contaminated	Lead Beryllium	Obstructs access to the 618-1 and 300-259
9	304	Uranium concretion facility	Small/Historical	Uranium	Lead Asbestos	Obstructs access to waste site 300-15, 300-43, 300-251, and 300-28
10	304A	Uranium concretion change room	Small	Uranium	Asbestos	Obstructs access to waste site 300-15, 300-251, 300-43 and 300-28
11	305	Engineering testing facility, former test pile	Major/Historical	None identified in surveys	Asbestos, PCBs	Obstructs access to waste site 300-4, 300-15, 300-260, and 300-29
12	305A	Storage facility, former electrician and pipefitter shop (demolished Dec. 2004)[e]	Major	None identified in surveys	Asbestos, mercury	Obstructs access to waste site 300-15
13	305B	Hazardous waste storage facility/engineering development laboratory annex	Major/Active	Plutonium, uranium	Cadmium, mercury, lead	Obstructs access to waste site 300-15, 300-29, and 300-16
14	305BA	Boiler annex	Small/Active	Potentially radiologically contaminated	Potential lead contamination	Obstructs potential staging areas for waste site remediation
15	306W	Material development laboratory	Major/Historical	Potentially radiologically contaminated	Lead Suspect Beryllium	Obstructs access to waste sites 300-15, 300-33, 300-76, 300-224, and UP-300-9

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
16	306E	Development, fabrication, and test laboratory (includes 306E Neutralization Tank)	Major/Historical	Potentially radiologically contaminated	Lead Suspect Beryllium	Obstructs access to waste sites 300-15, 300-42, 300-224, 300-56, 300-256, 300-32, 300-33, and 300-258
17	306EBA	Boiler annex	Small	Potentially radiologically contaminated	None	Obstructs access to the 306E Building
18	311TF	Tank farm building	Small	Potentially radiologically contaminated	Lead Nitrate	Obstructs access to waste sites 300-224, UPR-300-40, UPR-300-39, and UPR-300-45
19	313	Former fuels manufacturing building	Major/Historical	Uranium	Arsenic Nitrate Chromium Copper Tetrachloroethylene asbestos	Obstructs access to waste sites 300-24, 300-224, 300-270, UPR-300-38, 313 ESSP, 300-15, 300-28, 300-251, and 300-260
20	314	Research and craft facility, former engineering development laboratory	Major/Historical	Uranium (200 kg) Dose rate: 15 mR/hr	Mercury PCBs Beryllium Lead arsenic	Obstructs access to waste sites 300-16, 300-80, 300-251, 300-24, 300-260, and 300-15
21	314B	Stress rupture test facility for 314 fuel fabrication operations	Major	Uranium	Mercury, lead, PCBs	Obstructs access to waste sites 300-24, 300-16, 300-260, and 300-15
22	332	Packaging test facility	Small	Potentially radiologically contaminated	Potential lead contamination	Obstructs access to waste site 618-1

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
23	333	N Fuels building (includes 333 West Side Tank Farm)	Major/Historical	Radiologically contaminated	Lead Asbestos Beryllium	Obstructs access to waste sites 300-32, 300-224, 300-219, 300-110, 618-1, UPR-300-46, and UPR-300-17
24	334	Process sewer monitor facility 300	Small/Historical	Radiologically contaminated	Lead Asbestos	Obstructs access to waste sites 618-1, 300-258, 300-259, and 300-224
25	334A	Waste acid storage building	Small/Historical	Radiologically contaminated	Lead Asbestos	Obstructs access to waste sites 618-1, 300-219, 300-259, and 300-224
26	342	Collection sump 1 – 300 Area TEDF sewer line	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
27	342A	Instrument/electrical building shop – TEDF	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
28	342B	Transformer pad/vault – TEDF	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
29	342C	Generator pad – TEDF sump	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
30	351A	Meter and testing building	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs access to waste site 300-4
31	351B	Meter testing and switchgear facility	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs access to waste site 300-4

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
32	377	Former geotechnical engineering laboratory	Major	Cobalt-60, cesium-137, strontium-90 Up to 30 mR/hr	Asbestos	Occupancy of several hours could exceed general worker dose limits Obstructs potential staging areas for waste site remediation
33	384	Power house building	Major	Potentially radiologically contaminated	Asbestos	Obstructs access to waste site UPR-300-42
34	3225	Bottle dock	Small	Potentially radiologically contaminated	Lead	Obstructs potential staging areas for waste site remediation
35	3228	Craft lunch room (demolished May 2002)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
36	3229	Deactivated former storage building (demolished Nov. 2004)[e]	Small	None identified in surveys prior to facility demolition	Asbestos	Obstructs potential staging area for remediation of waste site 300-24
37	3231	Electrician shop (demolished 2004)[e]	Small	None identified in surveys prior to facility demolition	PCBs	Obstructs potential staging areas for waste site remediation
38	3232	Storage building (demolished 2004)[e]	Small	None identified in surveys prior to facility demolition	PCBs	Obstructs potential staging area for remediation of waste site 300-4
39	3234	Storage building (removed from site)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
40	3503A	Electrical cable pit no. 2	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
41	3508T2	Siren northeast of California and Apple	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
42	3701A	Guard house, west gate (Apple Street) (demolished)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
43	3703A	Modular offices (removed between 2001 and 2004)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
44	3704	Deactivated former insulators storage facility (demolished Nov. 2004)[e]	Small	None identified in surveys	Lead, PCBs, asbestos	Obstructs potential staging areas for waste site remediation
45	3705	Photography building	Small	Potentially radiologically contaminated	Silver	Obstructs access to waste site 300-15
46	3705BA	Boiler annex	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
47	3706BA	Boiler annex	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
48	3707B	Power house offices (demolished June 1996)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site 300-24
49	3707D	Information services building	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
50	3707E	Deactivated construction storage facility (demolished Nov. 2004)[e]	Small	None identified in surveys	Lead, PCBs, asbestos	Obstructs potential staging area for remediation of waste site 300-24
51	3707H	Change house	Small	Potentially radiologically contaminated	Lead Asbestos	Obstructs potential staging areas for waste site remediation
52	3708	Radioanalytical laboratory	Small	Potentially radiologically contaminated	Asbestos	Obstructs access to waste site 300-15
53	3711	Maintenance storage building	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
54	3712	Storage building	Small/Active	Radiologically contaminated	asbestos and beryllium	Obstructs access to waste site 300-40, and UPR-300-38
55	3713	Carpenter shop	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
56	3715	Spare parts warehouse	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
57	3716	Storage building	Small/Active/ Historical	radiologically contaminated	asbestos and beryllium	Obstructs access to waste site UPR-300-17
58	3717	Spare parts warehouse	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs access to waste site 300-15

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
59	3717B	South maintenance facility	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs access to waste site 300-15
60	3718O	HEPA filter storage (demolished)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
61	3719	Computer facility	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
62	3720	Chemistry and metal sciences laboratory	Major	Radiologically contaminated	Lead Asbestos	Obstructs access to waste site 300-15
63	3720BA	Boiler annex	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs access to waste site 300-15
64	3722	Fabrication shop	Small/Active	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs access to waste site 300-15
65	3731	Laboratory equipment central pool	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
66	3731A	Graphite machine shop	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
67	3732	Storage building (demolished September 1996)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Former location of structure not known

Appendix A Summary of Facilities in the Scope of Action Memo

#	Facility	Name	Facilities[a, b, c, d]	Nature of Contamination		Associated Hazard
				Radioactive	Nonradioactive	
68	3734A	Paint storage building (demolished November 2001)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
69	3746D	Technical service annex	Small	Potentially radiologically contaminated	Lead PCBs asbestos	Obstructs potential staging areas for waste site remediation
70	3902A	West 75,000-gallon elevated water tank (demolished)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
71	3902B	East 100,000-gallon elevated water tank (demolished July 2002)[e]	Small	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation
72	3906A	Sanitary sewer lift station #1	Small/Active	Potentially radiological contamination	Potentially contaminated with hazardous substances	Obstructs potential staging areas for waste site remediation

[a] Major facilities are the larger, multi-room structures, generally with radiological and/or chemical contamination.

[b] Small facilities are small structures, generally with one to three rooms, and may or may not be radiologically and/or chemically contaminated. Also, most demolished facilities are considered "small" facilities because only the slab remains in place.

[c] Active facility is actively being used as of summer 2004.

[d] An "X" indicates that the associated facility qualifies for consideration as a historically significant property in accordance with the *National Historic Preservation Act of 1966*.

[e] Facilities listed as "removed" and "demolished" are included to address any at-grade or subsurface foundations left after the facility was removed or demolished.

HEPA = high-efficiency particulate air

TEDF = Treated Effluent Disposal Facility

APPENDIX B

SUMMARY OF RESPONSES TO PUBLIC COMMENTS ON THE ENGINEERING EVALUATION/COST ANALYSIS #1 FOR THE 300 AREA

Comments & Responses on the
Engineering Evaluation/Cost Analysis #1 for the 300 Area
DOE/RL-2001-30 Rev 0

Richard Smith (RIS):

1. **Comment (RIS):** *The structure of the document should be improved by placing each table and figure in the text immediately following its initial call-out. The practice of placing all figures and tables at the end of the chapter in which they are called out is great for the producers of the report, but is an abomination for the reader.*

   Response: Comment noted. The Action Memorandum being generated as part of this cleanup activity is not changing the alternatives laid out in the EE/CA. Revisions to EE/CA's are made if the comments provided would result in a change to the selected alternative. The Action Memorandum will guide the actual cleanup.

2. **Comment (RIS):** *Those tables which had multiple pages could be improved by changing the notation **(x Pages)** in the heading to **(x of y Pages),** so the reader would always know where he was in the table.*

   Response: Comment noted. The Action Memorandum being generated as part of this cleanup activity is not changing the alternatives laid out in the EE/CA. Therefore, there are no plans to revise the document. Revisions to EE/CA's are made if the comments provided would result in a change to the selected alternative.

3. **Comment (RIS):** *There is some confusion as to exactly what was included in the cost analysis. To do the costing properly, it would be necessary to have a postulated schedule that indicated when S&M started and ended for each facility or group of facilities, and when d/D&D started and ended for each facility or group of facilities. In Alternative 2, in which the d/D&D period is postulated to run for a period of 6 years, S&M must be carried out for each facility until d/D&D actually begins for a given facility. Similarly, the d/D&D expenditures are distributed over the 6-year period. In Alternative 3, S&M would have to be carried out for each facility for at least 3 years and for up to 5-6 years as each facility entered the d/D&D phase. There is no indication in the document that the varying durations of these time-phases were considered in any of the cost analyses.*

   It would be appropriate to include in Appendix B a schedule illustrating when S&M started and ended for each facility and when d/D&D started and ended for each facility, in both alternatives.

   Also in Appendix B, there should be a table illustrating the time-distribution of costs for each facility or group of facilities, for the purpose of calculating both the current-year costs and the present-worth costs of the total campaign.

   While the errors in the cost estimates arising from neglecting these time period variations should be fairly small, due to the short time periods involved, not presenting these details in the cost analysis leaves it somewhat suspect.

Response: At this time, a detailed schedule does not exist; therefore, one was not used in developing the costs. However, the overall cost provides a good basis for the comparison of alternatives since the detailed schedule is not known. The costs were developed using estimates prepared for the Hanford Site 300 Area Accelerated Closure Project, which were converted to 2004 dollars. A more detailed schedule for conducting the removal action will be produced during 2005, as DOE has a TPA milestone to produce a detailed schedule for this activity.

4. **Comment (RIS):** *Table ES-1: Add footnotes to the values in the Present-Worth column to state the assumed discount rate and period of application, e.g.,*
   (a) Assumes a net discount rate of 2.1% for a duration of 6 years.
   (b) Assumes a net discount rate of 2.8% for a duration of 11 years.

   Response: The detailed cost estimates, including the noted assumptions, are provided in Section 4 of the document. There are no plans to revise the document.

5. **Comment (RIS):** Page *1-3, 2nd paragraph, end of line 12: insert 'a'*

   Response: Comment noted.

6. **Comment (RIS):** *Page 1-3, 3rd paragraph, line 6:start of line, insert 'which' following 'substances'*

   Response: Comment noted. There are no plans to revise the document.

7. **Comment (RIS):** *Page 1-7, 3rd paragraph, line 12: suggest deleting 'offsite' , because there may be a clean disposal site onsite by then.*

   Response: The EE/CA reflects the current situation for the disposal of non-radioactive/ non-hazardous solid waste. If a new waste disposal facility becomes available, then there are several potenial methods for directing the disposal of non-radioactive/ non-hazardous solid waste from this action.

8. **Comment (RIS):** *Page 1-7, 4th paragraph, line 5: states that there are eight outlying waste sites. Footnote 6 names the 8 sites, but does not include Site 618-11. Is 618-11 not one of the outlying sites?*

   Response: Comment noted. The 618-11 burial ground is one of the 300-FF-2 Operable Unit outlying waste sites. The waste site is addressed in Interim Record of Decision for the 300-FF-2 CERCLA Operable Unit. It is not, however, one of the eight unrestricted use sites identified in the 300-FF-2 Explanation of Significant Difference issued by EPA in 2004.

9. **Comment (RIS):** *Page 1-12, Figure 1-4: None of the building numbers on the figure are readable.*

Response: Figure 1-4 provides the general location of the EE/CA boundary relative to the 300 Area. See Figure 2-1 for the map that identifies the specific building located within the EE/CA boundary.

10. **Comment (RIS):** *Page 4-5, Section 4.2.4, end of line 8: Suggest deleting the next sentence "The nondiscounted cost... ". Revise the next sentence to read 'The present-worth discounted cost is $107.4 million, assuming a net discount rate[7] of 2.1% over the assumed 6-year duration of deactivation/D&D.*

Response: Comment noted. See Comment #4.

11. **Comment (RIS):** *Page 4-6 and 4-7, bottom of page 4.6, last sentence: Suggest revising that sentence to read ' The present-worth discounted cost is $135.7 million, assuming a net discount rate[8] of 2.8% over the assumed 11-year duration[9] of S&M plus d/D&D. '*

Response: Comment noted. See Comment #4.

12. **Comment (RIS):** *Page 5-10, 3rd paragraph, 1st sentence, insert 'both' between "Under' and 'alternatives'*

Response: Comment noted.

13. **Comment (RIS):** *Chapter 7: This would be a good place to insert the postulated long-term schedule for both alternatives, showing the start and end of S&M and d/D&D for each facility or group of facilities.*

Response: Comment noted. See comment 3.

14. **Comment (RIS):** *Page A-33, Table A-15: The section labeled Status/History has some incorrect information in it.*

The catch tank was not associated with the PCTR but with the tank used for approaches to critical. That tank certainly had cadmium sulfate in it at one time, but I am not aware of any plutonium in that tank.

The TTR was a small reactor, used for a variety of purposes, but exponential pile experiments was not one of them. It was often used to provide neutrons to drive a thermal column attached to its side, irradiating selected materials in a highly thermal neutron spectrum.

At one time, there was a leak in a tank placed in the core of the PCTR which dripped a plutonium solution onto the concrete floor in the east reactor room. The area surface was cleaned and overlaid with floor tile. I don't know what, if any, decontamination efforts were applied to that spill area when the reactor was removed.

Response: The information on the leak will be noted and provided for use during facility waste characterization and demolition activities.

15. **Comment (RIS):** *Appendix B: This would be the place to insert a table showing the postulated time distribution of expenditures for S&M and for d/D&D for each facility or group of facilities, to make transparent the calculation of the costs for each facility or group of facilities throughout the 6-year or 11-year periods associated with Alternatives 2 and 3.*

Response: See response to Comment No. 3.

Nancy Kroening (NK):

1. **Comment (NK):** *Finally we hope to see these buildings gone. However, I urge the agencies to treat radioactive materials found in them to be treated under stringent protocols, not as hazardous wastes.*

   Response: The EE/CA focuses on CERCLA hazardous substances as the driver for determining if a CERCLA action is warranted. CERCLA hazardous substances include both hazardous substances (e.g., chemicals) and radioactive substances. The regulatory requirements applicable to this activity are listed in the EE/CA and will be included in the Action Memorandum. The action will comply with ARARs.

2. **Comment (NK):** *All this work and all these millions of dollars (on top of a billion already spent) is good reason to stop creating further nuclear hazards.*

   Response: Comment noted.

3. **Comment (NK):** *This seems like too much money. We citizens are willing to pay for cleanup, but we are not willing to line the pockets of corporate fat-cats. What measures are being taken to assure a fair profit, but not over 6 – 8%? In today's market, that would be more than fair. Is there a bonus system for a job well done?*

   Response: The cost estimate takes into account the cost for performing the removal action.

4. **Comment (NK):** *Again, where will the demolished materials be located?*

   Response: The primary disposal site for the radioactive, mixed radioactive and hazardous, and hazardous only wastes is the Environmental Remediation Disposal Facility (ERDF) located on the Hanford Site. The ERDF is a state-of-the-art waste disposal facility.

5. **Comment (NK):** *Soil remediation definitely should be done.*

   Response: Soil remediation will be addressed by a separate cleanup action for the 300-FF-2 operable unit. The buildings need to be removed before the soil remediation effort can begin.

6. **Comment (NK):** *Wildlife in the area should be relocated, if possible, and nesting areas protected during the nesting season. Have inventories been done?*

   Response: The 300 Area is a developed industrial area and does not contain any sensitive biological areas. Still, prior to D&D occurring biological reviews are performed to determine

whether or not any special precautions need to be taken to protect or relocate the existing wildlife.

7. **Comment (NK):** *I urge the U.S. DOE to operate within the Tri-Party Agreement. I'm glad D&D was selected.*

   Response: Comment noted.

Antone Brooks (AB):

1. **Comment (AB):** *It seems like a shame to destroy buildings like the 331 building which have state of the art research facilities and in which DOE and others have invested large amounts of money to construct. There is no real evidence that this building has any radiation problems and that there is any gain by destroying it. If this building is involved in the "clean-up" it is a serious mistake that costs a lot of money with zero benefit.*

   Response: A Request for Proposal has recently been issued for the River Corridor Closure Contract (RCCC). The RCCC RFP was written to demolish all of the 300 area facilities; however, there are built in delayed release dates for some specifically identified buildings. Ongoing use of the buildings is considered in scheduling the D&D work.

Les Davenport (LD):

1. **Comment (LD):** *I support the choice of the recommended Alternative Two (D&D) in Section 6.0 of Engineering Evaluation Cost Analysis #1 for the 300 Area, DOE/RL-2001-30, Rev.0, 2004. The use of ERDF, a lined waste disposal facility with effluent collection that can accept CERCLA and specific RCRA waste generated anywhere on the Hanford Site is very important to me.*

   Response: Comment noted.

2. **Comment (LD):** It is best to do the work now. Do not delay D&D for up to 11 years of added S&M costs.

   Response: Comment noted.

3. **Comment (LD):** *Obviously, facilities listed in Table 7-1 must be completed to meet TPA milestones due 9/30/2006 and 9/30/10. However, if funding is limited and S&M becomes necessary for some of the facilities, I would prefer that the worst radiological hazards be eliminated first. These facilities are 303A, 303B, 303C, 303E, possibly 303F, 303G, 304, possibly 305B, 306E, 306W, 3708, 3712, 3716 and 3720. The 377 steam generator examination facility can probably be delayed because it is one of the newest buildings in the 300 Area and should have minimal S&M costs.*

   Response: Comment noted.